

THE

February, 1960

CHEMIST

VOLUME XXXVII



NUMBER 2



Florence E. Wall, AIC Charter Member
Receives Honorary AIC Membership

(See page 51)

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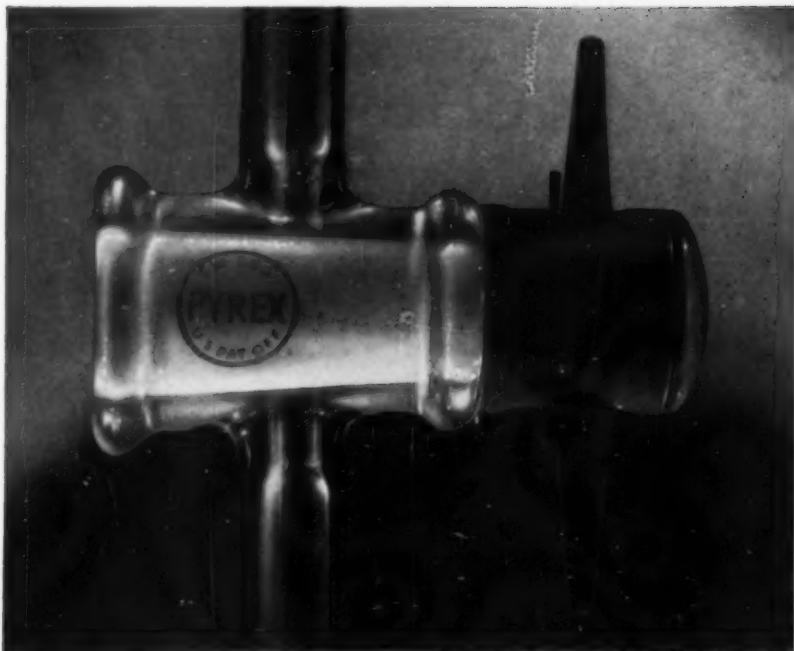


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†Patent applied for



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THE AMERICAN INSTITUTE OF CHEMISTS, INC.

60 East 42nd street, New York 17, N. Y.

Entered as second class matter April 8, 1936 at the Post Office at New York, N. Y., under Act of August 24, 1912. Second class postage paid at New York, N. Y. Issued monthly.

Subscription price, \$3.00 a year to Members, \$4.00 to Non-Members. Single copy, this issue, \$0.35. Copyright, 1960, by THE AMERICAN INSTITUTE OF CHEMISTS, INC.

Vol. XXXVII

February, 1960

Number 2

THE AMERICAN INSTITUTE OF CHEMISTS

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Deadlines for THE CHEMIST: For the March issue the deadline is February 15.

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THE AMERICAN INSTITUTE OF CHEMISTS does not necessarily endorse any of the facts or opinions advanced in articles which appear in THE CHEMIST.

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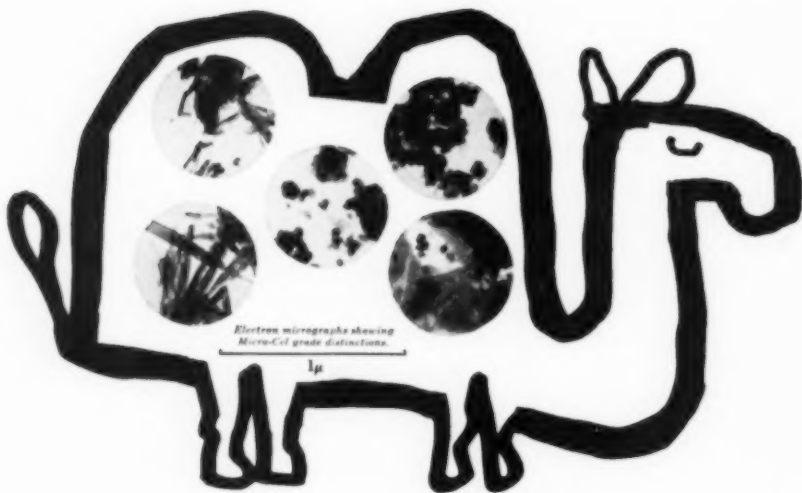
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TO COME IN MARCH

Dr. R. Adams Dutcher, professor-emeritus of Agricultural and Biological Chemistry of Pennsylvania State University, who was recently awarded the Honor Scroll of the Pennsylvania AIC Chapter, will tell us some of the things chemists have been doing in the field of nutrition during the past fifty years. • By request of the Council, those who became AIC members since our directory was published (THE CHEMIST, April 1958) will be listed to serve as a supplement to this directory.

Recommended Suppliers and Services

J. T. Baker Chemical Co.	The Lento Press	71
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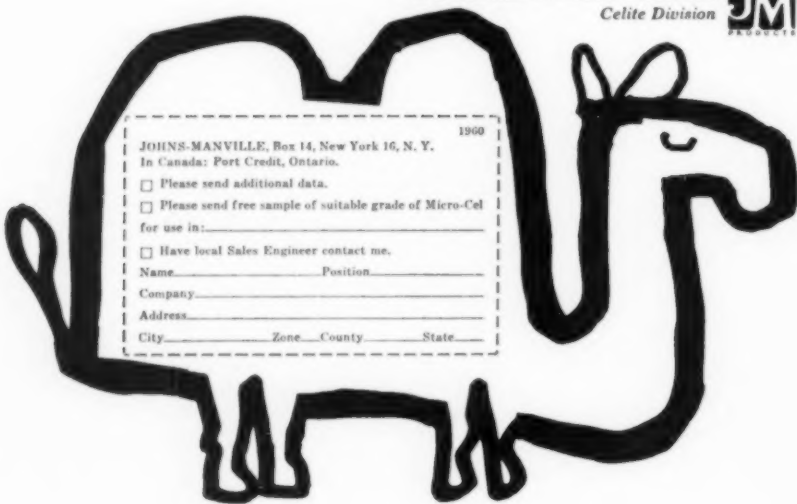


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EDITORIAL

Not for Personal Prestige Alone

THE fourth objective of the AIC is to "Strive to enhance the prestige and distinction of the professions so as to extend their influence and usefulness." One way to enhance the prestige of the professions would be, through counsel and communication, to bring the public to a realization of what kind of men and women constitute our professions. The judicious use by chemists and chemical engineers of their academic degrees would help to do this.

Chemists and chemical engineers, by virtue of years of academic preparation, and achievements or potential achievements, easily merit public esteem. In some cases they have chafed under the sting of the lack of public appreciation. Ignorance of the academic discipline required may lie behind much of this belittling public attitude.

The intelligent use of academic degrees, from the first to the highest, in industry, in press releases, in civic activities, on stationery, in writings, and by associates (because the word of one person about another is potent), will materially aid in giving the public greater understanding. Such a program is by no means a futile endeavor. The medical profession, by constant reiteration of the title of "doctor" in the U. S., has trained the public to make its obei-

sance to that title, though in earlier days the physicians and the barbers were professional twins. The public has also accepted the extension of the title to the clergy, dentists, veterinarians, and even educators. It can be trained, as well, to extend it to all persons who hold the highest academic degrees.

The press, which only mirrors the public attitude, has been negligent in the use of proper academic titles for chemists. The need to be understood by the general reader, and caution in the use of titles where they cannot easily be checked, may serve as temporary excuses. The press, though, is never the last to follow a trend, and today some of the most respected newspapers and magazines do apply titles correctly.

It is also encouraging that the public relations departments of most industrial firms now include the title, "Dr.," where it is appropriate, in their press releases. They know it implies the compliment that these firms have persons of the highest academic training working for them and are scientifically oriented. Contrarywise, it is reported that a few firms never use academic titles in their releases, thus contributing to professional unhappiness among their scientists and possibly be laying the groundwork for failure to recognize

technological progress. The use of titles holds no possibility of creating distinctions among the degree holders. Everyone knows that ability and achievements do not necessarily parallel academic degrees nor the occasional absence of a degree. However, the public needs to know that chemists and chemical engineers are, as a group, academically educated to be creative professionals, not trade-school trained to be good artisans.

This facet of good public relations

is recognized in the program of the objectives of the Delaware AIC Chapter. Our national Committee on Ethics has also considered it and has stated that, "chemists and chemical engineers are entitled to and should use their 'earned titles' with good taste."

Our professions should enthusiastically support the use of appropriate titles, not for personal prestige alone, but to help raise the status of the professions as a unit.

Special AIC Announcements

1960 Annual Meeting Committee

The members of the Committee for the 37th Annual AIC Meeting, to be held at the Radisson Hotel, Minneapolis, Minn., May 12-13, 1960, are:

General Chairman, Morris Kenigsberg, The Toni Co., 332 Rosabel St., St. Paul 1, Minn.

Program, Dr. Milton Harris, AIC President-elect, The Gillette Co., Boston 6, Mass.
Morris Kenigsberg.

Albert C. Holler, Twin City Testing & Engineering Lab., Inc., St. Paul 14, Minn.

Registration and Finance: W. W. Benton, Economics Lab., Inc., St. Paul 1, Minn.
Harold Johnson, Remington Rand Univac

Phillip P. Dahl, Baker Industries
Charles L. Howe, Geo. T. Walker Co.
Thomas Oberle, Economics Lab., Inc.

Publicity, Albert C. Holler.

Joseph P. Cosimini, The Toni Co.
Mathias B. Poetz, Jr., The Toni Co.

Arrangements, Michael H. Baker, 109 Portland Ave., Minneapolis 1, Minn.

Gordon C. Brown, Durkee-Atwood Co.

Goodwin Joss, Goodwin-Joss Labs.

Dr. Sidney E. Miller, General Mills, Inc.

Gilbert H. Rivard, G. H. Tenant Co.

Ladies' Program, Mrs. John L. Wilson, 2101 Dudley Ave., St. Paul 8, Minn.

Mrs. Joseph Abere

Mrs. Morris Kenigsberg

Miss Virginia Carletta

Mrs. Michael Baker

Mrs. Lloyd Reyerson

To All AIC Members

Nomination ballots will be mailed in March to AIC members. Those chosen on this ballot will appear on the election ballot to be sent out in April. Please send in your vote promptly.

New Members of the Advisory Board for The Chemist

Three new members have been appointed to the Advisory Board of *THE CHEMIST*, to replace retiring members, Dr. Ray P. Dinsmore, Dr. W. George Parks, and Dr. L. F. Pierce.

The new Advisory Board members are: D. H. Killeffer, P. O. Box 443, Clearwater, Florida; James W. Perry, director of the Center of Documentation & Communication Research, Western Reserve University, Cleveland, Ohio, and Dr. Albert C. Zettlemoyer, research director, National Printing Ink Research Institute, and professor, Lehigh University, Bethlehem, Pa.

New Officers For the Midwest Chapter

The Midwest Chapter announces the election of the following officers:

Chairman, Dr. Vanston H. Ryan, Rockhurst College, Kansas City, Mo.

Chairman-elect, Dr. A. Ernest MacGee, Skelly Oil Co., P. O. Box 436, Kansas City 41, Mo.

Secretary, Raymond S. Dalter, Spencer Chemical Co., Research Center, 9009 W. 67th St., Merriam, Kansas.

Treasurer, Raymond H. Frederick, Reynolds Metals Co., 4900 Oak St., Kansas City, Mo.

National Council Representative, Bernard Weiner, Vet Products Co., 1524 Holmes St., Kansas City 8, Mo.

Charter Meeting of Beaver Falls Chapter

The Charter will be presented to

the new Beaver Falls Chapter, Feb. 11, 1960, by AIC President Kuhn, at a dinner meeting at the Beeches, Rome, N. Y. Ray F. Seifert of the Niagara Falls Chapter will bring "Greetings and Guideposts." John Kotrady, AIC Secretary, will speak briefly on the AIC. Clark E. Thorp, president, Fiber Products Research Center, Inc., is chairman of the chapter.

Forty States Now Represented in "The 200 Club"

The Committee on Membership and the Committee on New Chapters and Expansion report that all states are represented in "The 200 Club" except Arkansas, Colorado, Maine, Mississippi, Montana, Nevada, New Mexico, Oklahoma, Vermont and Wyoming. The Committees would like the club to be representative of the entire country, so if you are from one of these "Down East," "Deep South," or "Far West" states, please volunteer! A volunteer is also needed from Puerto Rico. Also representatives are needed in certain major metropolitan areas: Buffalo and Rochester, N. Y.; Columbus and Cincinnati, Ohio; Jacksonville, Fla.; Fort Worth and San Antonio, Texas, and Portland, Oregon. Send your name to Dr. L. T. Eby, co-chairman of the Membership Committee, The Enjay Co., Inc., 1141 E. Jersey St., Elizabeth, N. J., or to Martin Williams, chairman, New Chapters'

Committee, 1013 Pratt Ave., N.E., Huntsville, Ala.

Recent additions to "The 200 Club," bringing the number of its members to 144, are:

- Dr. Morris J. Blish, F.A.I.C., Phoenix, Arizona.
Dr. Michael J. Carver, F.A.I.C., Omaha, Nebr.
Rev. Paul J. Casey, S.J., F.A.I.C., Scranton, Pa.
Raymond C. Crippen, F.A.I.C., Baltimore, Md.
Kitty Fuller Dilks, M.A.I.C., Broomall, Pa.
Dr. A. K. Doolittle, F.A.I.C., So. Charleston, West Va.
Dr. John B. Entrikin, F.A.I.C., Shreveport, La.
Dr. D. M. Eny, F.A.I.C., Army Chemical Center, Md.
Dr. A. F. Finelli, F.A.I.C., Akron, Ohio
Dr. David M. Gans, F.A.I.C., Cleveland, Ohio
Dr. John J. Grebe, F.A.I.C., Midland, Mich.
Lewis E. Harris, F.A.I.C., Lincoln, Nebr.
Carroll L. Hoffpauier, F.A.I.C., New Orleans, La.
Dr. Earl T. McBee, F.A.I.C., West Lafayette, Ind.
Wardley D. McMaster, F.A.I.C., Detroit, Mich.
Elizabeth F. Myers, F.A.I.C., Raleigh, N. C.
Dr. Gerard G. Osterhof, F.A.I.C., Rapid City, So. Dak.
Dr. John H. Payne, F.A.I.C., Honolulu, Hawaii
Hamilton W. Putnam, F.A.I.C., Jeffersonville, Ind.
Dr. James V. Quagliano, M.A.I.C., Tallahassee, Fla.
Burleigh Reed, F.A.I.C., Topeka, Kansas
Dr. Vanston H. Ryan, F.A.I.C., Kansas City, Mo.
Clarence W. Scott, M.A.I.C., Springhill, La.
Milton O. Schur, F.A.I.C., Pisgah Forest, N. C.
R. Norris Shreve, F.A.I.C., Lafayette, Ind.

Simon A. Simon, F.A.I.C., Longmeadow, Mass.

Dr. Lloyd Van Doren, F.A.I.C., Tempe, Ariz.

Perry G. Vlacos, F.A.I.C., Sacramento, Calif.

Dr. Mary L. Willard, F.A.I.C., University Park, Pa.

Professional Appointments

Feb. 2, 1960. Buffalo, N. Y. Dining Room "B," Norton Hall, University of Buffalo. Meeting of Niagara Chapter. Dinner 6:30 p.m. Meeting 8:00 p.m. Speaker, Prof. Marvin Farber, Chairman, Department of Philosophy, University of Buffalo. Subject, "Modern Advances in Philosophy." For reservations: Dr. J. F. Walker, P.O. Box 517, Niagara Falls, N. Y.

Feb. 2, 1960. Wilmington, Delaware, Kent Manor Inn. Meeting of Delaware Chapter. Social hour, 6:15 p.m. Dinner 7:00 p.m. Speaker Dr. Ivor Griffith, F.A.I.C., president, Philadelphia College of Pharmacy & Science, Philadelphia 4, Pa. For information, Dr. Stephen D. Bruck, E. I. du Pont de Nemours & Co., Inc., Experimental Sta., Carothers Research Lab., Wilmington, Del.

Feb. 4, 1960. Huntsville, Ala. Russel Erskine Hotel. Meeting of Alabama AIC Chapter. Social hour 6 p.m. Dinner 7 p.m. Speaker, Dr. Ottis K. McMahon, partner, Rohrer, Hibler & Replogle, consulting psychologists, Atlanta, Ga. Subject, "Making Executives Out of Chemists." For dinner reservations: Dr. C. E. Feazel, Southern Research Institute, Birmingham, Ala. (FAirfax 3-6592), or Martin Williams, Redstone Arsenal, Huntsville, Ala. (Jefferson 6-4411, Ext. 37743).

Feb. 4, 1960. Atlanta, Ga. Emory University, Alumni Bldg. Joint meeting of Piedmont Chapter with the Institute of Food Technologists. Dinner 6:30 p.m. Speaker, Dr. Ernest Guenther. Subject, "Essential Oils in South America." For information: A. J. Shingler, The Coca-Cola Co., P.O. Drawer 1734, Atlanta 1, Ga.

Feb. 9, 1960. New York, N. Y. The Chemists' Club, 52 E. 41st St. Meeting and Dinner of AIC Board of Directors and National Council. Board meets at 5:30 p.m.; Council at 6:00 p.m.

PROFESSIONAL APPOINTMENTS

Feb. 10, 1960. New York, N. Y. The Chemists' Club, 52 E. 41st St., Joint Meeting of New York AIC Chapter and New York Section of the American Chemical Society. Dinner 6:30. Panel Discussion, "The Professional Assistance to Chemists Provided by Professional Societies." Speakers: Dr. Clifford F. Rassweiler, F.A.I.C., and James Stack. For reservations: Dr. K. S. Konigsbacher, Evans Research & Development Corp., 250 E. 43rd St., New York, N. Y.

Feb. 11, 1960. Philadelphia, Pa. Engineers' Club. Luncheon meeting of Philadelphia Chapter. 12:15 p.m. Speaker: Carl Setterstrom, F.A.I.C., Anisun Corporation. Topic: "The Chemist in Commercial Development." Luncheon reservations should be made by Feb. 9, with Dr. E. M. Kipp, Foote Mineral Co., Berwyn, Pa. (Niagara 4-6800).

Feb. 11, 1960. Rome, N. Y. The Beeches. Meeting of Beaver Falls Chapter. Dr. W. E. Kuhn, AIC President, will present the Charter to this new Chapter. John Kotrady, AIC Secretary, will speak briefly. For information: Clark E. Thorp, Fiber Products Research Center, Inc., Beaver Falls, N. Y.

Apr. 5, 1960. Buffalo, N. Y. Meeting of Niagara Chapter. Details to be announced.

April 21, 1960. Minneapolis, Minn. Coleman's in Highland Park. Joint dinner meeting of Twin City Chapter and the American Institute of Chemical Engineers. Social hour 6:00 p.m. Dinner 7:00 p.m. Speaker: Dr. Walter S. Guthmann, president, Morton Chemical Co., Division of Morton Salt Co., Chicago, Ill. Subject: "A Chemical Executive Looks at Chemical and Engineering Education." For information, Dr. Joseph F. Abere, Minn. Mining & Mfg. Co., 2301 Hudson Road, St. Paul 6, Minn.

May 11-13, 1960. Minneapolis, Minn. Radisson Hotel. 37th Annual AIC Meeting. The Twin City Chapter will be our host.

June, 1960. (Day to be announced.) **Minneapolis, Minn.** Meeting of Twin City Chapter. Award of student medals. For information: Dr. Joseph F. Abere, Minn. Mining & Mfg. Co., 2301 Hudson Rd., St. Paul 6, Minn.

May 11-12, 1961. Washington, D. C. Statler Hotel, 38th Annual AIC Meeting. The Washington Chapter will be our Host.

"Student Quality Drops in Medicine. Schools Alarmed by Decline in Top Applicants — Lure of Other Careers Cited."

"A serious decline in the caliber of medical students is beginning to worry observers in American education and medicine . . .

"A number of alarming developments can be reported in this connection: . . .

"While medicine once was able to skim the cream of each year's crop of students, with only the law and the ministry competing, the scientific and engineering careers that have been glamorized more effectively in recent years now take the top students. Medical research is having an increasingly harder time getting outstanding young men . . .

—*The New York Times*
(Jan. 14, 1960)

(The above excerpts are from a story on the Report by Dr. Robert A. Moore, president of the Downstate Medical Center, State University of New York, Brooklyn, N. Y., which was presented as the William Henry Welch Lecture at Mount Sinai Hospital, New York, Jan. 13, 1960.)

The Technical Association of the Pulp & Paper Industry has moved to larger quarters at 360 Lexington Ave., New York, N. Y.

The NSPE Guards the Title of 'Engineer'

The National Society of Professional Engineers, 2029 K St., N.W., Washington 6, D.C., is successfully conducting a campaign to restrict the title 'Engineer' to legally qualified personnel. In the *American Engineer*, Sept. 1959, it was reported that the Bay State Abrasive Products Co., Westboro, Mass., had announced that it would restrict its use of 'Engineer' to legally qualified persons.

The following excerpt is taken from the wording of the Company's quoted announcement:

"The term 'Engineer' should be omitted from all titles of Bay State employees unless such person is registered as a professional engineer in the Commonwealth of Massachusetts. The use of this title may be continued provided such person is now so registered or has made application for registration. If such applicant is turned down, the term 'Engineer' must be dropped from his title and one of the following terms used:

"In the Research & Development Department and in the Quality Control Department, the term 'Chemist' or 'Ceramist' shall replace the term 'Engineer' . . ."

Thomas Finnegan of Niagara Mohawk Power Corporation, Buffalo, N. Y., who is both a Professional Engineer and a Fellow of the AIC, queried the editor of *American Engineer*, to ask if those who are now to be called "Chemists" in the announcement "are really chemists, or are they to be called such solely to avoid calling them engineers? . . . The title (Chemist) denotes a pro-

fessional status and should not be lightly applied to those who perhaps should be called some sort of technician."

This announcement was also discussed at a recent meeting of the Niagara AIC Chapter, which approved the campaign of the NSPE to restrict the title of engineer to legally qualified persons. It also recommended that chemists take the same precautions to see that the name of our profession is not downgraded.

The American Petroleum Institute, 1271 Ave. of the Americas, New York 20, N. Y., has begun publication of a new quarterly, *Petroleum Today*, to contribute to public understanding of the petroleum industry.

Dr. Albert L. Elder, F.A.I.C., director of research, Corn Products Co., Argo, Ill., is the new president of The American Chemical Society for 1960.

William R. Willets, F.A.I.C., of Titanium Pigment Corp., New York, N. Y., has been elected secretary-treasurer of the Society of Rheology.

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The Chemical Control Laboratory in the Plant Food Industry

Nelson C. White

*Vice President, Chairman of Committee on Long Range Planning,
International Minerals & Chemical Corp., Old Orchard Road, Skokie, Ill.*

(Excerpts from a talk entitled "How Management Regards the Role of the Chemical Control Laboratory," presented before the Conference on Chemical Control Problems, Washington, D.C., Oct. 15, 1959).

THE lot of the control laboratory, and the chemists in it, is not an easy one. Their work is concerned with large volume, bulk materials; by some standards, crude materials, varying in physical and chemical composition and hence difficult to sample accurately. Variations in chemical composition before, during and after processing in the fertilizer plant make comparative analyses difficult, even with good sampling. Processes have continued to grow in complexity and are subject to all normal problems aggravated by the conditions just mentioned.

Then, there is the inescapable fact that control laboratories are working with a product that is cheap as dirt. That is an almost literal . . . statement. What is the average selling price of plant food? 3 cents a lb. or less? What else can you buy today at that price?

Add all these conditions together and you see the problem as most industry management sees it. The control laboratory must chart the course between the scylla of cost control and the charybdis of state inspection. It must prevent over-formulation and

other inefficiencies leading to higher costs. It must at the same time provide insurance against the problems caused by failure to pass state inspections. These problems are not made easier by the type of regulation and the character of enforcement in some instances.

Management recognizes all this and in most instances has done something about it . . . The fact that many of you (at this meeting) are from industrial control laboratories is evidence that management has faith in your abilities to solve problems outside the laboratory as well as in it. All you, I'm sure, are far better trained, better paid and better provided with material facilities, laboratories and equipment, than your predecessors of a few years back. More technically trained men are employed in operating the plants, men who can more easily understand and carry out the necessary control measures dictated by the laboratory. The review of performance is moving away from the production minded to the market minded segment of management.

All this is good. But not good enough. Why? Because it is all done

in a spirit of defense . . . The whole industry, and hence the control laboratory, struggles against rather than struggling for, worries because someone down the road may offer a product at a lower price and worries because meeting the implied threat may result in running afoul of state regulations. So, the control laboratory . . . is primarily a defense unit.

And what should the control lab be? It should be one of the strongest links in the management chain, connecting research, production and sales, acting as an extension of each and insuring a strong safe bond to the customer . . . whether it be a part of a large organization or a small one. It should be linked to research, either in its own company or to the vast body of new information made available by outside organizations. It should be prepared to translate this information into practical terms.

As an example, let's talk about minor elements. As the fund of agricultural knowledge is increased, more is being learned about plant needs for other elements than the familiar N-P-K. Also important is the form in which these needs should be supplied. Some of these elements were found in the cruder materials formerly used in plant food manufacture. Some were in the soil. Constant drains of growing crops coupled with decreased or no replenishment leads to deficiencies reflected in substandard production or outright failure. Which ones should

be replaced along with N-P-K and where are they obtained in the best form to fit the needs of both the soil and the process-making food for the soil? Here is where the control laboratory links research and production, first in finding proper source materials, and second, in checking their successful use in processing through all steps to the finished material. Such a link is needed between research and production, between the radical, meaning new and different, and the reactionary, meaning satisfied with the troubles they already have. The control laboratory provides an objective connection.

The link to sales is obvious in the same example. Give a good salesman something tangible to talk about and he's off and running. When that something represents real value to the customer, he's hard to stop until he gets his order. Nothing gives him more support than a firm conviction that his plant will produce what he promises. And nothing supplies that conviction more than the knowledge that a competent control laboratory is supporting him, checking every step from start to finish, to insure the quality of the goods he sells.

This is what a control laboratory should be in our industry, a central unit in a management team all devoted to the task of supplying the market with products of maximum value, and doing so without coercion. Our industry can become and remain

THE CHEMICAL CONTROL LABORATORY . . .

what it should be only by taking aggressive action to establish and maintain its own integrity as a basic tenet of sound business policy.

The implications (of this conference) are that the control section is not properly regarded by management generally and I agree. We are a segment of the chemical industry. Other segments have control laboratories. Are there questions as to the role they play? Not many. Everybody knows that they are there to protect their company's most precious asset, its reputation, its brand name. Who checks on them, what disinterested arbiter protects their customers . . . ? None. But two vitally interested groups, the customers themselves and competitors for those customers provide all the inspection. It is the customer and the competitor whose eternal vigilance keeps the manufacturer humping to produce the best product.

Why is it different in our industry? . . . It all goes back to the days when we were in an agricultural economy. When 4 men on the farm could produce only food and fiber enough for 5 people . . . Many changes have occurred . . . Today's farms are better managed and operated. One man on the farm now provides ample food and fiber for 24 others . . .

The plant food industry, back in the early days of farming, was also primitive. It has grown up, matured,

steadily but slowly. In the early days it gratefully accepted government help in promoting its product and grudgingly submitted to government controls, both direct and indirect. Through the years, it has accommodated itself to both, the crutch and the hobble, with the result that today this big essential industry moves at a crawl in comparison with others.

Have you ever reflected on the similarities and differences between the plant food and farm equipment industries? Both are vital to agriculture . . . dependent on agriculture. But the equipment manufacturers didn't shirk the responsibility of doing their own research, development and control; didn't turn the task over to the state schools of agriculture or a federal equivalent of T.V.A.; didn't receive the blessing of state inspections to protect them and their customers from unscrupulous competitors. What does a comparison show? Which industry has done the best job, both for itself and for the farmer? Well, the American farm is the most highly mechanized of any in the world, more thoroughly mechanized than some industries. The farmer has moved to capitalize on every advantage that improved farm equipment can give him. But the average farmer still uses less than half the plant food required to give him maximum value.

Is there a lesson here? I think so. Not a new one. Just another example

of how free enterprise, restricted only by the normal counter-balancing forces of the open market, is still the best business system . . .

But to return to the control laboratory, and management's ideas as to its proper place . . . In my opinion, although its role has continued to grow in importance, it has not yet attained the stature it deserves. Furthermore, it will not achieve its proper place without a complete change in management philosophy accompanied by compensating changes in the philosophy of those government agencies working on Plant Food problems . . .

All of (those government agencies) were created to fill a vacuum left by the industry. All . . . have made and are continuing to make valuable contributions in the area . . . But they have gone so long unchallenged by others that they have come to feel that they alone can and should be the final voice. Out of this has come the conception that in helping the farmer they must protect him from the predatory instincts of the industry. Consequently, they are not content with stepping in only when they are sure the industry is wrong, but insist on exhaustive proof that industry is right. In any field this would pose a difficult problem. In a field as inexact as agriculture, it can have no effect but to inhibit progress and stifle initiative. It has done both.

I don't condemn the government agencies . . . I do condemn the in-

dustry for providing the climate that allows these things to go on. We preach emphasis on quality but practice emphasis on price. It's cheaper to let state colleges do the experimental work with our products even though they thus preempt our proper place in the minds of our customers. It's cheaper to let T.V.A. do much of the process work even though no one group can possibly explore all the problems that need solving. It's cheaper to let government inspectors protect us against unscrupulous competition than to seek protection thru quality control measures and brand consciousness. Maybe the out-of-pocket first costs are lower this way but part of the resultant price we pay is that we are a feeble, flabby and largely futile industry.

No individual company can change this situation. The industry can, if it can first make up its collective mind that it wants to and will pay the price. This price will include the cost of aggressive industry sponsored and directed programs in research and development as well as control. With these established, we can suggest that government resurvey their role and find it to be that of urging and assisting the industry to take bold steps for more rapid progress toward their common goal of better service to agriculture.

Some companies, my own among them, are not only willing but eager.

Evolution in the Profession of Chemistry

Florence E. Wall, Hon. AIC

Consultant, 210 East 68th St., New York 21, N. Y.

(Presented when the author received Honorary AIC Membership at a meeting of the New York AIC Chapter, held January 7, 1960, in New York, N. Y.)

AN appropriate sub-title for this paper might well be "The Ins-and-Outs of Professional Chemists," because the farther one goes back into the history of chemistry, the more apparent it becomes that our professional progenitors came into chemistry from backgrounds of widely differing interests. And any current survey of the industry shows that there seems to be no restriction to the applications that the professional chemist of today can find for his knowledge and skills.

One of the primary objectives of our INSTITUTE is "to educate the public to an understanding of what a chemist is." (Every mention of *chemist* here implies *chemical engineer*.) That laudable duty was a serious problem when the INSTITUTE was founded. Even now, despite all the publicity given to chemistry in the press, many of us occasionally find it difficult to explain to non-chemists just what we are and what we do.

An early definition, possibly familiar to many of you, was that of J. J. Becher, who, in the 17th century, described chemists as

"... a strange class of mortals, impelled by an almost insane impulse to seek their pleasure among smoke and vapor, soot and flame, poison and poverty." (1)

There were many references to the

poverty of the "chymists" of those days. On the whole they were not highly esteemed. In the *History of the Royal Society*, the opinion is expressed

"... that a plain industrious Man ... is more likely to make a good Philosopher, than all the high, earnest, insulting Wits, who can bear neither Partnership nor Opposition. The Chymists lay it down as a necessary Qualification of their Happy Man ... that he must be rather innocent and virtuous, than knowing ... For certainly, such Men, whose minds are so soft, so yielding, so complying, so large, are in a far better Way than the bold and haughty Asserters; they will pass by nothing by which they may learn; they will always be ready to receive and communicate observations; they will not condemn the Fruits of others Diligence; they will rejoice to see Mankind benefited, whether it be by themselves or others." (2)

Most presentations of the history of chemistry start continuity from the days of alchemy; but it is no compliment to the professional chemist of our day to consider him the spiritual descendent of the alchemists. Further comment by the writer cited above noted that chymists were more numerous in the 17th century than ever before. They were in three groups:

"(1) those that look after nature in general; (2) those that make medicines; (3) those that seek riches in the Philosophers Stone and the Great

(1) Becher, J. J., *Physica Subterranea*, (1669).

(2) Spratt, Thomas; quoted in Filcher, *History of the Institute of Chemistry of Great Britain and Ireland*, (1914).

Elixir . . . The best prospects are from the first two, in new compositions, figures, colors, and the virtues of bodies; and from their labors the true philosophy is likely to receive the noblest improvements. The third group aim to endow us with not only the benefits of this life, but with immortality itself. Their success has been as small as their design was extravagant. Their writers involve them in darkness so that it is hard to know which is more difficult—to understand their meaning or to effect it."

Their chase of the Philosopher's Stone was so intent, and their thinking was so narrow that "if an experiment lay outside of their immediate road it was free of discovery." The final observation here was that Physick derived many advantages from the labors of some of these chymists—those that had "only the discreet and sober Flame, and not the wild Lightning of the others Brains."⁽³⁾

No; all the experimenting of the individual chemists did not make a science. It has always been agreed that there was no real science until groups cooperated to arrive at the truth of scientific thought for the benefit of society.

The Royal Society, founded in 1660, hoped for great progress in the useful arts, but the promise was not fulfilled so promptly as expected. It persevered, however, and it was joined by many other societies—dedicated to the advancement of science (including chemistry), philosophy, and various arts. Chemistry emerged as a recognized branch of science late

in the 18th century, but there was no important organization devoted to the interests of chemistry alone, anywhere, until the Chemical Society of London was founded in 1841.

The chemists that participated in the activities of these societies, and similar ones, soon established in several countries of Europe, were converts to chemistry from other branches of study—chiefly medicine, pharmacy, botany, and physics (natural philosophy). All activity everywhere was centered on the formulation and development of the science of chemistry, not on the practice of it. Good laboratories were few, and until the 19th century, courses of formal instruction came slowly.

In the early days of our INSTITUTE there was much discussion about modeling it on the lines of the Institute of Chemistry of Great Britain and Ireland, which was founded in 1877, to establish qualifications of education and experience for those that wished to be recognized as professional chemists. Admission to that Institute (now called the Royal Institute of Chemistry) has always been by examinations in the science at various stages of membership. The struggles of that Institute, in trying to establish the right of its members to call themselves *chemists*, in the face of the legal right to exclusive use of the term by pharmacists, makes good reading.

It persevered, however, and not-

(3) Ibid.

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withstanding hampering legislation, it did succeed in showing that a chemist is a definite professional entity, qualified by education and experience for recognition, regardless of how or where he applies his knowledge. The proposed organization had the support of chemically trained men in many branches of practice—public analysts, government personnel, consultants, industrial chemists, and teachers, who saw in it a promise of better education for all chemists. Since 1892, women have been admitted to membership on equal basis with men.

The need for our INSTITUTE became apparent after World War I, when it was possible to appraise the enormous advances in chemistry that had been made in an incredibly short period of time. Work in the science was over-organized technically and woefully under-organized professionally. The sudden closing of the war plants threw thousands of qualified scientists and technically trained personnel out of employment, and the resultant post-war industrial depression was none the less dreadful because it was relatively short.

All that led up to the founding of the American Institute of Chemistry (as it was called at first) has been recounted here and there, and will soon be available in the complete history of the INSTITUTE. It was not always easy to convince some of those that were securely established that

they should help others to find and hold a place in the profession; but enough altruistic individuals were found to start the organization—as you all know—in 1923.

There was much discussion in the early days about the kind of profession we wished to be. "The Professions" to many persons have usually meant only medicine and law (especially to many in those professions). Granted that medicine and law are very old, and that their standing is unassailable, they represent entirely different types of discipline from ours. Medicine was handicapped by authoritarianism for centuries. It was Paracelsus—that arch-heretic of hide-bound scientific thought—who, in the 16th century, roared at the alchemists that their true function was to make medicines, not gold; and also taunted the complacent arm-chair "medical philosophers" that they should learn medicine by going out where the sick were, instead of sitting around, trying to make everything conform to the intellectual legacy of Galen.

Medicine is now only one of the many professions that owe much to chemists, and this dependence is based on the integrity of material things and natural laws, to which they are trained, as well as their own integrity in reporting on them. Consider diagnosis, for instance. Time was, when a physician was proud of his ability to make a good diagnosis from topical signs and symptoms, but this art is

now at least obsolescent. Most physicians now hesitate to express more than a tentative opinion. They must wait for reports of all kinds from laboratories; and they must rely on the knowledge and intellectual honesty of the scientists that make the necessary tests. Some have been so jealous of their prerogatives that they would restrict reports on findings, implying that a statement of the presence of certain bacteria or other evidence constitutes "making a diagnosis" by a lay person—a violation of the Medical Practice Act. The practice of medicine has well been considered more art than science. It should make any scientist feel uneasy to have to take the word of another on matters so vitally important in his work.

The law also depends on the integrity of scientists—many of them chemists—for valuable testimony in court. The statement by a lawyer that "A chemist is not a professional person; he is a scientist" once aroused many questions, but the speaker would neither give nor hear any explanations. That was simply that. It makes one wonder.

The argument was raised in our early days that no chemist could call himself truly professional unless—like a physician or a lawyer—he were in business for himself, with a sign on the door and all that; and that, in fact, most chemists were (and still are) employed persons. Time has

changed that concept because increasing numbers of practitioners in both the venerated professions have taken positions with industrial and commercial organizations. The change in status seems to have raised no barriers within the ranks of either group. Their standards are based on educational background, established professional procedure, and experience.

We should have the same standards. Granted that the science of chemistry is less than 200 years old, here it is with an incredibly diversified body of knowledge, established nomenclature, complete courses in universities, colleges, and special schools, voluminous texts, learned societies, and a vast literature. To define the professional entity associated with all this, the Education Committee of the INSTITUTE first proposed:

A chemist is a person qualified by education and experience to ascertain the facts of chemistry and interpret them so as to benefit humanity and accelerate progress. (4)

The key words here are *qualified* and *interpret*, and this definition implies everything expressed in the longer ones that were proposed later.

Another important objective of the INSTITUTE is to insist on adequate training and experience qualifications. To ensure continued constructive evolution in the profession of chemistry, not only the INSTITUTE as an

(4) Crossley, M. L., "Report of Committee on Professional Education," THE CHEMIST, Vol. VIII, 327 (1931).

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organization but also all of us as individuals should maintain a campaign of missionary work on professional education. And this should start at the high school level. Much time is wasted, and there is much disappointment and frustration for the college student who learns that he should have had certain courses in high school. It is unfortunate that curricula in secondary schools are not much broader than they seem to have become in recent years. As many students in high school do not know what they wish to do later, they should have more required courses, and relatively few electives. But this involves general public education. We can help here only by taking an interest in local school affairs, to learn what is being done and to make constructive suggestions whenever possible.

Broader education for the profession of chemistry should be continued through college. Agitation over poor English has effected some reforms in this department; but considering the diversified fields of interest awaiting the graduates in chemistry, students would be better prepared for future work if they had some "exposure courses," or some well-planned lectures on economics, professional procedure (including ethics), market analysis, and business administration. To ensure professional solidarity—another of our objectives—there can be no better common denominator

than a broad, solid basic education, not only in chemistry and related technical subjects but also in the facts of living and working in a competitive world.

In any branch of business there are responsibilities as well as privileges and a protocol for personal conduct to ensure that one appears to best advantage. Francis Bacon expressed this very well in saying,

"I hold every man a debtor to his profession; from the which as men of course do seek to receive countenance and profit, so ought they of duty to endeavour themselves by way of amends to be a help and ornament thereunto." (5)

Those that are interested only in research in pure science are often impatient with, if not antagonistic to, those engaged in industry and technology. There is nothing new in this attitude, because in every generation there have been some that considered the study of chemistry as a pastime and intellectual exercise, completely ignoring the valuable applications of their science to the arts and industries.

This trend of thought goes back at least to Plato (5th century B.C.), who taught that practice led men from contemplation of truth, and thus degraded their intellect. He sternly disapproved of two mathematicians of his time, who had invented ingenious instruments to prove the truth of some of their theories. And, two centuries later, the great Archimedes,

(5) Bacon, F., *Elements of the Common Laws of England*, (1630).

whose wonderful machines routed the Romans at Syracuse during the Second Punic War, (212 B.C.) refused to write anything about them, because he considered them sordid and ignoble diversions from his studies in pure geometry.

It was this attitude that separated mechanics from geometry and established it as a military art. Francis Bacon believed that the true goal of science is to endow human life with new discoveries and resources. Few of the natural philosophers after his time concerned themselves with the so-called practical arts, yet it is through the devoted practitioners of these arts that most of our professional heritage in chemistry has descended.

Contemporary with advances in pure science, there were in every period much activity and accomplishment in agriculture, brewing and fermentation, dyes and textiles, fuels, glass and pottery, leather and tanning, mining and metallurgy, paper and printing, and other "arts." Works were run by foremen, who understood operations but had little basic knowledge. Most processes were based on secrets, handed down through generations. As scientists became interested in these practical arts, they learned the secrets and usually introduced important and valuable improvements.

During the 19th century, many colleges opened their classrooms and

laboratories, and many special schools were established, for the formal study of various industries. Investigation of the scientific problems related to these useful branches soon established their respectability. Behold them now!—all tucked in somewhere among the 23 divisions of our American Chemical Society, each employing hundreds or thousands of these professional chemists in which we are interested.

Important to professional solidarity is professional consciousness. To revert to our friends the physicians, they would like to have the exclusive use of the title "Doctor." Organized chemists and other scientists with hard-earned doctor's degrees should wage a strong campaign of opposition. Anyway, the physicians wear their title like a crown, and regardless of what they do or where they do it, they never forget—or allow anyone else to forget—that they are duly ordained Doctors of Medicine. Lawyers, too, sometimes convey the impression that they are the incarnation of the Majesty of the Law.

Despite all that is still being done to inculcate it, many chemists still seem to lack this kind of professional consciousness, which we all should have by virtue of the common denominator of required education and experience. The ways in which we elect to use it should make no difference in professional consciousness, whether the chemist works in a laboratory or plant, as a consultant, a patent attor-

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ney, a business executive, or whatever. Yet, in the lack of it, many patent attorneys count themselves with lawyers; works chemists, with engineers; "information specialists," with writers; and many professors and teachers are lost in the hordes of all teachers. It cannot be said too often that it is what we know that should characterize us—not what we happen to be doing with our knowledge. True, each different application of it requires specialized collateral skills, but these should always be considered as additive, never subtractive.

Our objective of educating the public involves facilities for good publicity and public relations. How to get publicity? Eva LeGallienne, the actress, explained the secret of the good publicity accorded to one of her projects in two little sayings: "Keep on doing things," and "Repetition is reputation." We have all the machinery, but in this activity, as in being a "watch dog" on education, each individual should serve as a self-appointed member of the Publicity Committee, and discreetly utilize every opportunity for public relations for the INSTITUTE and for professional chemists.

All this business of public relations can help to make the INSTITUTE a force in fighting quackery, and especially in the careless use of the term *chemist* in the public press. No one derives benefit from a news story

when a "boy chemist" blows up his mother's kitchen while working with a \$3.98 set of chemicals. Almost all newspapers now have science editors; but other departments also need a little more education here.

Writing about science is a wonderful avocation, but, as Elwood Hendrick once said:

"The man of research must set forth his findings in terms that will be understood. Worse than the miser, who cannot carry his treasure with him when he dies, the man of research can do that . . . People need mastery of the art to write well of the science."

Much has been said and written on this subject, but there is still abundant evidence that many writing chemists still have not learned to treasure their language as they treasure their other fine instruments of precision. This is a very important point in our educational campaign. ⁽⁶⁾

One could go on, but it serves no good purpose to digest for you here what has been expressed so much better and at greater length by others. Your file of *THE CHEMIST* could well serve as a textbook on the principles we hold.

To revert to the "Ins-and-Outs," mentioned at the beginning, this whole idea grew from a casual survey of what chemists have done with their chemical education after they got it. It should be of interest to know that, in addition to many branches of medicine and public health, law, engineer-

(6) Wall, F. E., *Journal of Chemical Education*, **20**:580 (1943); **24**:129 (1947).

ing, and those "practical arts," itemized earlier, chemists have made places for themselves in banking, construction, foreign trade, investments, insurance, an increasing number of branches of government, and a wide variety of administrative posts. (7) It is amusing to speculate on the reactions of Paracelsus if he could wander among us today. He might roar more loudly, but he would probably be stunned roarless, to realize that the work of chemists is now not only to make gold, but also to save gold for most of those that utilize their services.

(7) Thomas, C. A., "The Scientist as an Administrator," *THE CHEMIST*, Vol. XXV, 265 (1948).

Florence E. Wall

Albert Parsons Sachs, F.A.I.C.

Consultant, 314 W. 100th St., New York 25, N. Y.

(Presented when Florence E. Wall received Honorary AIC Membership at a meeting of the New York AIC Chapter, January 7, 1960.)

MISS FLORENCE WALL is a charter member of THE AMERICAN INSTITUTE OF CHEMISTS and the New York Chapter. In those dim days which now seem to have a legendary character, I welcomed Miss Wall to her first meeting of the INSTITUTE and I learned from the start that she was one of us, a chemist. With all her womanly qualities, Miss Wall has remained one of us—a chemist, interested in the profession of chemistry, and not merely a woman who happened to become a chemist. Rather, she is a chemist who just

In its thirty-seven years, THE AMERICAN INSTITUTE OF CHEMISTS has contributed greatly to the evolution of the profession of chemistry. We should always keep in mind the saying of one of our early presidents, Dr. Frederick E. Breithut:

"Other chemical societies aim to make a chemist out of a human being; The American Institute of Chemists aims to make a chemist into a human being."

Long may the INSTITUTE thrive! Through the efforts of all of us, it should accomplish all its worthy objectives, and thus help chemists to help themselves toward the end of our definition: "to accelerate progress and benefit humanity."

happens to be a woman.

It is well known that an army consists chiefly of privates and not of generals, and the profession of chemistry consists chiefly in the persons of chemists and not of Nobel Prize laureates. If Miss Wall has achieved some new chemical synthesis or has established some famous Wall reaction, this is not the occasion to dwell on it. We are here to render homage to Miss Wall for her services to the profession of chemistry rather than to the science of chemistry.

I am tempted to refer you to a

story I wrote for *THE CHEMIST* of April 1932, entitled "A Versatile Woman Chemist," subtitled "The Story of Florence E. Wall, with some of the factors that have made her success possible. An appraisal by a fellow-chemist."

There I told about her hailing from Paterson, N. J., and of her remarkably broad education at the Academy and College of St. Elizabeth near Morristown, N. J. When she was graduated, just before World War I, there was little that a girl trained in chemistry could do besides teach. So she taught chemistry and other sciences for a few years.

In 1917 she entered the chemical industry with the Radium Luminous Material Corporation in Orange, N. J., when the dangers of radium handling were not sufficiently understood. Although many fatalities have resulted from that work, Miss Wall, fortunately, escaped unscathed. Then there was the usual period of employment with various firms on various projects and, finally, her major work on cosmetics and cosmetology, beauty culture.

In a field which had no great reputation with the lay public nor with professional chemists, she brought a semblance of order to the trade education; then a sense of integrity to the testing of the products and treatments and legitimate claims for them, and in-service advice and assistance to the craftsmen (beauticians or cos-

metologists, we call them). This was professional practice on a high level. For her firm she established an institute for training practitioners of the science and art of hair dyeing, part of which is an understanding of when it is desirable to dye, and when not to dye. At that time she planned to study medicine, thinking it would improve her knowledge of her chosen field, but she was saved from this fate, and medicine's loss has been our gain.

She did everything she could, however, including several years of graduate study, to formulate and delimit cosmetology as a recognized branch of applied science. For this arduous pioneering she received from New York University the first higher degree it ever granted for work in this field. She became, and has remained, an articulate authority on beauty culture and the use of cosmetics.

I said of Miss Wall in that earlier appraisal in *THE CHEMIST*: "Like most successful people she has vast resources of energy and great powers of concentration; unlike many geniuses she has a fine sense of humor which helps her over many business and professional bumps and permeates her social life." Twenty-eight years later I can only repeat this estimate.

Florence Wall's work was evaluated more recently when the medal of the Society of Cosmetic Chemists was presented to her at the annual meeting of that society, December

13, 1956.* The citation mentioned as outstanding contributions to the science and art of cosmetology:

Miss Wall's pioneering efforts towards the scientific development of hair dyes and techniques of applying them;

Her educational accomplishments in transmitting her knowledge to students and especially to teachers of cosmetology;

Her authorship of five textbooks (now these are six) and over 300 published articles.

Besides being a charter member of our INSTITUTE, Miss Wall is a member of the American Chemical Society, the Society of Medical Jurisprudence and the Society of Cosmetic Chemists.

I have deliberately refrained from listing her specific achievements in various positions which she has held, both in actual chemical work and in technical editing and writing. She has been a consultant for several years and although most of her work has been in cosmetics she has always tried to do at least one job each year which had nothing to do with cosmetics just so that people will not think she has a single track mind. This desire has led her into many interesting projects, especially literary criticism and translating from many languages.

My purpose here is to call attention to her efforts to enhance the appreciation of the chemist as a professional person. She edited our journal, *THE CHEMIST*, practically single-handed

for two years. She also handled public relations for our INSTITUTE and for this New York Chapter in the early years, and served many years on the New York Chapter and National councils. Among her valuable contributions here were the talks she always willingly gave to students in both high schools and colleges on opportunities in chemistry, especially for women.

Incidentally, she presented the first paper on cosmetics ever read before a meeting of the American Chemical Society, and has presented other papers periodically in the Division of Chemical Education and of the History of Chemistry.

Miss Wall is a person without prejudice with regard to race, creed, national origin or intellectual status.

Where many have been passionately searching for money and official prestige, she has been for herself passionately searching for knowledge and the opportunity to share it. In a long life I have seen the personalities of many chemists marred by envy, hunger for financial success at any cost, prejudice and failure to recognize the merits of colleagues. Miss Wall has never shown any of these unhappy aspects of professional life. She has always been eager to serve, has passed up opportunities for financial gains to remain a chemist of high professional standards, pioneering in new fields, profiting only from her own merits, not from the labors of others.

* *J. Soc. of Cosmetic Chemists*, vol. 8, No. 3, May 1957.

FLORENCE E. WALL

In a world which seems to be devoted largely to achieving success and recognition regardless of true merit, it is a pleasure to have been the colleague and friend during the

entire life of our INSTITUTE of one whose purpose has been to do the good work and who is here as the first chemist elected to honorary membership who happens to be a woman.

Presentation of Honorary Membership

FLORENCE E. WALL, consultant, New York, N. Y. and Charter Member of THE AMERICAN INSTITUTE OF CHEMISTS, received Honorary AIC Membership at a meeting sponsored by the New York AIC Chapter, held at the Hotel Shelburne, New York, N. Y., January 7, 1960.

Dr. E. J. Durham, director, Nichols Laboratory, New York University, and chairman of the Chapter, presided.

Albert Parsons Sachs, consultant,

New York, N. Y., also a Charter AIC Member, introduced Miss Wall. Dr. Wayne E. Kuhn, AIC President, presented the Honorary Membership Certificate to Miss Wall, who responded with a paper on "Evolution in the Profession of Chemistry." (See preceding pages.)

Two additional Charter Members of the AIC were introduced at this meeting: Nathan Smith, consultant, 79-07 211th St., Flushing 64, N. Y., and Dr. Frederick W. Zons, consulting chemical engineer, 239 Centre



Charter Members: Mr. Sachs, Miss Wall, Dr. Zons and Mr. Smith. (Charter Member, Dr. C. R. Downs, who was present, is not shown.)



Dr. Kuhn, Miss Wall, Dr. Durham

St., New York, N. Y.

The citation on the Honorary Membership certificate reads:

To

Florence E. Wall

In recognition of active devotion throughout the life of the Institute. The ways in which she fostered it in its early years and continued to serve it later are innumerable. The Institute takes pride in the first Honorary Membership to be conferred on a woman chemist.

The first International Compressed Air & Hydraulics Exhibition and the European Fluid Power Conference will be held April 25-29. For information: Exhibition Manager, IC-AHE, at St. Richard's House, Eversholt St., London, N.W.1, England.

The Federation of Paint and Varnish Production Clubs has changed its name to Federation of Societies for Paint Technology. Its address is 121 South Broad St., Philadelphia 7, Pa.

M. W. Kellogg Co., subsidiary of Pullman, Inc., 711 3rd Ave., New York 17, N. Y., announces a research and development service for companies seeking to develop new commercial processes.

Dr. Harold K. Work, F.A.I.C., associate dean of the College of Engineering and director of the Engineering Research Division of New York University, spoke at the dedication, on November 16, of the Division's new Hudson Roy Searing Memorial Building, at University Heights, N. Y.

Communications

AIC Support Helpful

To the Secretary:

On behalf of the membership of the American Association of Clinical Chemists, I wish to express our thanks for the motion adopted by The American Institute of Chemists favoring the professional right of clinical chemists to independently practice their profession. I am sure that the added support of the AIC will assist in achieving our goals.

—Robert L. Dryer, Ph.D.
National Secretary, AACC

Employment Agency Services

To the Editor:

I noted with interest the letter of H. A. Levey, Hon. AIC, in the November CHEMIST. Since I am associated with a professional Employment Agency, dealing extensively with the chemical industry, I wish to take this opportunity to advise you of what an agency, properly staffed with chemists, can do for their fellow scientists.

. . . No company looks upon a chemist utilizing an agency as one lacking initiative, but rather as one with imagination. The properly staffed agency is of mutual service to applicant and company. The company utilizes it as a fine and fruitful source of recruitment, while the chemist receives proper counseling in the selection of his new position and

in the exploration of a new field of science.

Perhaps it would be ideal for the National AIC Council or the local Chapters to form an Employment Committee to explore possible aids for their members.

However, can any voluntary group offer the time and service of an agency? It is a full-time position utilizing many resources and requiring a great expenditure of time and money.

—Joseph C. Shediack, Jr., M.A.I.C.
New York, N. Y.

Make Science an Integral Part of our National Culture

To the Editor:

Through science man has now attained the intellectual stature of a god. He is literally Superman! But, alas, with every advance of science, the gulf between the creative scientists and the masses grows ever wider and deeper. Herein lies the great danger to free society. One thing should be clear. If free nations are to survive, their citizens no longer can remain indifferent to science.

It is not enough that we train more technicians or even educate more scientists and engineers. We must do that. But our most urgent duty is to make science an integral part of our national culture. Especially must we make science an integral part of the education of all who will become our public servants; for they will be

called upon to make critical decisions in dangerous situations requiring a basic understanding of science. The public must become able to grasp the inspiration of science and learn to apply its orderly methods in all of their thinking and acting. Then, perhaps we shall have a citizenry less easily stampeded by a Sputnik or a "Flying Saucer."

This is admittedly a terrific task for all of us; but in proportion as it succeeds we shall then find that the scientist, and particularly the chemist, will rise in the estimation of the public to the dignity of his true profession.

—Dr. George A. Abbott, F.A.I.C.
Grand Forks, No. Dakota

Congratulations from a Charter Member

To the Secretary:

Many congratulations to the workers who have developed the AIC into a power for good in the scientific world.

—Robert W. Belfit, Sr., F.A.I.C.
Watertown, Conn.

Academic Titles

To the Editor:

It is remarkable to read in *C. & N.* May 25, 1959, p. 69, the article on: "Use of Academic Degrees" and to compare this with the article, "Dawn of the AIC" in *THE CHEMIST*, Aug. 1959, p. 305.

In both, the societies seem to want something not really belonging in their jurisdiction. These things are

not duties in the realm of professional societies because they have not the authority to decide in such cases. It may be that in 1920-21 there were no academic chemists, but to decide who is an academic chemist was never in the domain of a society, not in 1920 and not in 1959. We have schools whose duty it is to decide after examinations who belongs to the academic men, and they give the titles corresponding to the schools and examinations.

Therefore, there is no Board of Directors of societies nor any Committee that can refuse anybody the right to put his degree before or after his name, or give him a title not given to him by the schools. No professional society, but the faculties give or refuse academic titles.

I believe the tasks for the professional societies reach much further: To protect the academic people from any insult or discrimination and to inform the public at large on behalf of their work and their importance to the life of everyone. If the societies want to do this, they have plenty to do. Raise the status of your members by informing the man on the street or the man sitting in front of the TV set. Explain to them the work and the difficulties scientists have to deal with, not only in their careers, but also in school obtaining their education.

If the societies want to be links between students and industry, and

COMMUNICATIONS

between industry and university, nothing can be said so long as the freedom of the universities and the rules of ethics are respected.

—Dr. Robert Lobstein

Written in Vienna, Austria

Thank You!

To the Secretary:

. . . Please convey our thanks to the Editors of *THE CHEMIST* for their nice thoughts on our behalf in the Editorial of last November. (See, "The AIC Supports Qualified Clinical Chemists," *CHEMIST*, Nov. 1959, p. 385.)

—Harold D. Appleton, *Chairman*
Board of Editors, "Clinical Chemistry"

Please Note Correct Title

To the Editor:

I would like to point out an error in my title in the listing of new members (*CHEMIST*, Jan. 1960, p. 28). My duties have been in the capacity of "Research Chemist." Presently, I am head of the Organic Research Section of Economics Laboratory, Inc., 914 Guardian Bldg., St. Paul 1, Minn.

—Thomas M. Oberle, M.A.I.C.

Dr. Virgil F. Payne, F.A.I.C., professor of chemistry, Monmouth College, has been elected 1960 chairman of the ACS Division of History of Chemistry. **Sidney M. Edelstein, F.A.I.C.**, president of Dexter Chemical Co., New York, N. Y., was elected secretary-treasurer.

We Have Enough Problems Without Those of Tax Exemption

To the Editor:

It seems to me that the INSTITUTE has enough problems to be concerned with in improving the professional status of chemists, without becoming involved in the question of tax exemption. It's difficult to see, for example, how tax-exempt organizations cause "economic pressures on industrial chemists," as claimed in your January editorial. Let's apply our energies where they are needed.

—Dr. Charles E. Feazel, F.A.I.C.
Birmingham, Ala.

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The IUPAC

Dr. Edward Wichers, associate director of the National Bureau of Standards, at the October meeting of the Washington AIC Chapter, gave an interesting talk on the organization, functions and activities of the International Union of Pure and Applied Chemistry, IUPAC. The technical and scientific activities of IUPAC are organized in six divisions, each representing a major field of chemistry. The Union holds biennial conferences where reports are presented by their Commissions on various aspects of chemistry which enjoy international cooperation. These include nomenclature, atomic weights, physicochemical constants and certain methods of analysis. The Union sponsors symposia and meetings on special topics, and in some instances cooperative laboratory work. It also sponsors general and specialized congresses. The most recent one was held in Munich in 1959. Over 3000 attended, 300 from the U.S.A. A conference on Physical and Analytical Chemistry is scheduled for Canada in 1961.

The Chemist and His Profession

Dr. John K. Taylor of the National Bureau of Standards, chairman, Committee on Professional Relations and Status of the American Chemical Society, addressed the Washington AIC Chapter, in November, on "The Chemist and His



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Profession."

He noted first of all that most chemists are salaried, making the problem of their professional status much more difficult than it is for self-employed professionals. Well-conceived public relations programs relating the nature and value of the chemist's work were advocated. It was pointed out that good public relations is a responsibility of individual chemists as well as of organizations. Dr. Taylor went on to discuss academic standards for chemists, professional ethics and public recognition, emphasizing the role which the individual chemist can play in each of these areas.

A spirited discussion followed Dr. Taylor's talk. Among the topics considered were registration for chemists, the comparative professional status of chemists, engineers and other scientists, Government ratings of scientists, and educational and training standards.

—*Washington AIC Chapter
Newsletter*

On Legislation

Public Law 159 placed the federal government into air pollution studies in 1955. This law was recently extended for four more years at five million dollars a year. It directs the U. S. Public Health Service to conduct and support research and to provide technical services to state and local governments and to private agencies.

Congressional hearings were held on the patent provisions of the Space Act, Nov. 30-Dec. 9, before the House Committee on Science and Astronautics, and on Dec. 8-9, before the Senate Small Business-Monopoly Subcommittee. The Patents Committee of the NAM urged liberalization of the patent provisions. The Commissioner of Patents announced that the General Services Administration was entering into a contract with the George Washington University Patent Law Foundation to have a study made of Government procurement and patent policies.

A Scientific Alert to a Potentially Scientific Monopoly

"The Government is said to own a larger number of patents than any other patent holder in the country. The statement leads to confusion because a patent taken over by the Government loses the one characteristic which distinguishes it as a patent. And when someone says he is 'using' a Government patent in his business, he compounds the confusion because the only possible use of a patent is to stop someone else from using the invention covered by it.

"A patent consists *altogether* in the right of its owner to *exclude others* (for a given time) from practicing the invention covered by the patent. It has no relation whatever to the right of the owner himself to practice the invention. The Government long ago decided that it could not rightly exclude any citizen from practicing the invention covered by a patent held by it and it does not, in fact, do so. Thus, when a patent is taken over by the Government the right to exclude is extinguished and thereafter to call the thing a 'patent' only leads to misunderstanding.

"The citizen who takes a so-called 'license' under a Government-held patent gets no 'patent protection' whatever. He cannot exclude anyone else from using the same invention, nor can he insist that the Government exclude anyone else.

"The right to exclude others for a time from practicing the invention is all that makes the patent system work. It is the reward that induces the making of inventions and the insurance that induces businessmen to risk the initial cost of development and promotion usually necessary to get a new thing on the market.

"These are the reasons why people who realize the immense benefit the patent system has been to the public deplore the acquisition of patents by the Government. If Government took over *all* patents, there would be no patent system. And for these same reasons these same people deplore the wholesale sterilization of patents that is going on today through anti-trust proceedings. The communist-minded, however, love it and are sitting back chuckling."

—(The late) William R. Ballard
Formerly chief Patent Attorney
for A. T. & T.

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Current Projects on the Economic & Other Impacts of Scientific Development, 1959. 25 cents.

Bibliography on the Economic & Social Implications of Scientific Research & Development. 25 cents. Both of the above publications are available from the Superintendent of Documents, Government Printing Office, Washington 25, D.C.

Patents and Inventions—An Information Aid for Inventors, 15 cents. Superintendent of Documents, U. S. Gov. Printing Office, Washington 25, D.C. or from Department of Commerce Field Service Offices.

"Inventions Wanted by the Armed Forces. Nov. 1959." Request from National Inventors Council, U. S. Department of Commerce, Washington 25, D.C.

"Our Economic Goals in the Years Ahead." An address by Harold C. McClellan, president, Old Colony Paint & Chemical Co. Request from N.A.M., 2 East 48th St., New York 17, N. Y.

The Chemical Industry Facts Book. 1960-61 Edition. \$1.25 from Manufacturing Chemists' Association, Inc. 1825 Connecticut Ave., N.W., Washington 9, D.C.

V.I.S.R. News. Bulletin published by Virginia Institute for Scientific Research, 2820 Grove Ave., Richmond 21, Va.

Industrial Bulletin. Monthly. Arthur D. Little, Inc., Cambridge 42, Mass.

Scientific Manpower 1958. Papers of the 7th Conference on Scientific Manpower and Symposium on Demographic & Sociological Aspects of Scientific Manpower. Issued in late 1959. National Science Foundation, 1951 Constitution Ave., Washington 25, D.C. (Query if charge.)

American Science Manpower. Employment and Other Characteristics 1954-55. Issued in July 1959 by the National Science Foundation, 1951 Constitution Ave., Washington 25, D.C. (Query if charge.)

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Patent Attorney. At least 2 yrs. soliciting or general chemical patent experience. Position in Central Patent Department of Chicago firm. Box 23, THE CHEMIST.

The National Science Foundation reports that the Federal government will obligate an estimated \$8.1 billion during fiscal 1960 for the support of scientific research and development. The complete report is in *Federal Funds for Science, VIII*, available at 45 cents a copy from the Superintendent of Documents, U. S. Gov. Ptg. Off., Washington 25, D.C.

Roger Williams Technical & Economic Services, Inc., of Princeton, N. J., has acquired the British consulting firm of George Lewi and Partners, London.

For Your Library

Symposium on Basic Research

Publication No. 56 of the American Association for the Advancement of Science, Washington, D.C. Dael Wolffe, Editor. 1959.

The book presents the addresses and conclusions of a symposium on basic research headed by President Eisenhower and a group of scientists, industrialists, government officials, and college presidents. Recognizing that there is strong evidence that, although we have the national resources of imaginative, competent and dedicated individuals capable of creating new knowledge, the fact remains that as a nation we are not giving adequate and suitable support to basic research. Consideration was directed to the question, "How can the nation stimulate and support basic scientific research on a scale and in a manner truly appropriate to national needs and resources?"

Most of the addresses devote some time trying to define basic research and to point out the value of research in this area. In one of the earlier addresses of the symposium, Dr. Alan T. Waterman emphasizes that basic research is research motivated by curiosity and interest, carried out to add new knowledge without necessity of a practical application. He urges encouragement of individual initiative in the field of intellectual endeavor. He points out that almost half of the basic research today is supported by federal funds; however, he directs attention to the need of more strongly supporting basic research in colleges and universities in order to strengthen our future. His address makes for stimulating and interesting reading and he does not overlook the problems to be met in increasing the emphasis and providing the opportunity to do more basic research in academic institutions.

The theme that basic research is a necessary investment for our future is emphasized by most of the contributors. In some cases it is emphasized as a basis for our preservation, in other cases for our future improvement. Dr. W. O. Baker of Bell Telephone Laboratories uses several illustrations of past basic research work that has provided the foundation of a number of today's scientific accom-

plishments. I like his "philosophy of ignorance" approach.

The position of the small liberal arts institution, the State university, and the private college is covered ably by competent men in the field. They pinpoint some vital problems.

Several industrialists spoke of the obvious need of basic research. Mr. Crawford H. Greenewalt of du Pont, in his address, "Basic Research: A Technological Savings Account," points out that many companies have undertaken basic research with their own personnel and funds in their own laboratories. He states, "Indeed, industrial research in this area is nothing more than a recognition by management of its responsibility to insure corporate longevity." Further, Mr. Greenewalt states, "We must place our reliance on basic research, which is to say the new discoveries in pure science which will support applied research in the years to come." As in the case of other speakers, it is recognized that basic research is not the responsibility of any one group. Certainly basic research in industry alone will not keep the aggregate effort at a sufficiently high level. The financial support of academic research appears to Mr. Greenewalt a clear responsibility of industry and government. Today's assistance is inadequate. Dr. Allen V. Astin urges increased federal funds for basic research. Dr. James Fisk and Dr. Mervin Kelly emphasize that basic research in industry will be productive.

In Dr. Paul E. Klopsteg's address, he made a most interesting proposal which elicited the greatest number of questions from those attending. He advocates a forward look at government legislation that will permit a taxpayer to give directly to academic institutions. Direct giving means an advantage to the taxpayer and to the institution. It is estimated that for each dollar going to a university via government, the individual or corporation must pay between two and three dollars in taxes. This means that the tax dollar has 1/2 to 2/3 of its value worn away while in government pipe lines.

Dr. Robert S. Morison pinpoints the role of private foundations in our affluent society.

In his summary, Dr. Dael Wolffe recognizes the fundamental fact, repeatedly mentioned, that neither the federal gov-

ernment nor any other external agency could safely be the sole or even primary source of financial support of basic research.

—Dr. W. E. Kuhn, F.A.I.C.

The Terpenes

Vol. 5. By Sir John Simonsen and W. C. J. Ross. Cambridge University Press. 662 pp. 5 3/4" x 8 3/4". \$15.50.

This last volume in the series on the terpenes, which began in 1931, deals with the triterpenes and their derivatives. The important literature to the end of 1953 is discussed and reference is also made to later publications. Subject and author indices are included to make this a most useful addition to the libraries of biochemists, pharmacologists, and organic chemists. Also included is an addendum to Vol. 3, prepared with the assistance of Dr. P. De Mayo, recording the recent contributions to sesquiterpene and diterpene chemistry.

—Dr. Frederick A. Hessel, F.A.I.C.

Process Dynamics

By Donald P. Campbell. John Wiley & Sons, Inc. 1958. 316 — xx pp. \$10.50.

The swift advance of processing techniques and of systems and devices to control processing steps require the development of a more effective theory by which these elements can be brought into harmonious cooperation. Dr. Campbell was engaged in this important work at the time of his sudden death. Fortunately, this manuscript was so nearly complete that others have been able to bring it to publication. In the book he develops the several aspects of processing of materials through a general approach to process dynamics and proceeds to the design of process and control as an integrated problem. He develops the linear network theory as a means of predicting a plant's performance before it is built. He discusses the applications of feed back control theory to industrial processes and develops an eminently practical approach to the problems of automatic control in dynamic systems. These theories will provide the practicing engineer with a sound basis for designing the ever more popular "automation" of today's industry.

—D. H. Killeffer, F.A.I.C.

Ion Exchange. A Laboratory Manual

By J. E. Salmon and D. K. Hale. Academic Press, Inc. 1959. 6" x 9". 136 pp. \$5.00.

This interesting little volume was devised for a practical course in ion exchange. The first part deals with basic principles. Other chapters cover preparation and properties of ion exchange resins; their behavior in columns and in chromatography; different apparatus and procedures, and other useful subjects concerning ion exchange.

—Dr. Henry Tauber, F.A.I.C.

Continuous Analysis of Chemical Process Systems

By Sidney Siggia. John Wiley & Sons, Inc. 381 pp. 6" x 9". \$8.50.

This is a compilation of the existing information concerning available instruments for continuous analysis of components in chemical process systems. The instruments are an extension of the laboratory into the plant and require the trained attention of the chemist for determination of accurate functioning and interpretation of indications. The various measurements on fluids, gaseous and liquid, are described and a list of manufacturers is included.

—Dr. John A. Steffens, F.A.I.C.

Chemical Books Abroad

DR. RUDOLPH SEIDEN, F.A.I.C.

Duncker & Humblot, Berlin-Lichterfelde: *Jahrbuch der gesamten Therapie*, by H. Braun and Else Y. Braun; 1958, 691 pp.; DM 48. — The 6th volume in this series brings reviews of therapeutic progress reported in the professional literature of the world during 1957. Twelve experts wrote the 2300 abstracts which are arranged in 9 sections. There are book reviews (44 pp.), and useful indexes of journals, diseases, pharmaceuticals, and authors. A most valuable reference book not only for the physician, but also for scientists such as biologists and pharmaceutical chemists engaged in research.

Pharmaceutical Press, London WC 1 (Rittenhouse Bookstore, Philadelphia 3): *British Pharmacopoeia* 1958; 1038 pp.; 63 s. — Official in Great Britain since

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Sept. 1, 1958 (100 years after the first and 5 years after the 8th editions were published). The 9th edition contains many new monographs, to include a wide range of new synthetic drugs, antibiotics, hormones, and biological substances that have been introduced in the past few years. Many of the older standards and tests have been revised and assays reviewed in the light of the latest developments in analytical chemistry. There are 27 appendixes (248 pp.) of special value to control and production chemists anywhere.

Verlag Chemie, Weinheim/Bergstr.: *Wasserbestimmung mit Karl-Fischer-Loesung*, von E. Eberius; 2nd ed., 178 pp.; paperbound DM 19.60. — The new edition of this well-known monograph brings additional literature references (now a total of 198) dealing with the use of this modern analytical method for the determination of water in all types of substances, from "Acetal" to "Zwiebelpulver" (onion powder); also information on improved equipment, solutions, and methods. • *Was nicht in den Annalen steht*, by J. Hausen; 2nd ed. 116 pp.; DM 6. — A well-illustrated, enjoyable collection of about 160 humorous true stories and anecdotes concerning a hundred famous chemists of all times.

The Chemical Society, London W 1: *Stability Constants: Part I, Organic Ligands*, by G. Anderegg and S. E. Rasmussen; 1957, 120 pp.; £3. — *Part II, Inorganic Ligands*, by Clara Berecki-Biedermann, L. Maltese, S. E. Rasmussen, and F. J. C. Rossotti; 1958, 147 pp.; £2. — These 2 volumes contain tables of all the organic and inorganic complexes arranged according to the ligands occurring in coordination compounds, and also the ligands' acid-base dissociation constants. The tables, published under the auspices of the International Union of Pure & Applied Chemistry, are timely and valuable because of the increasing importance now assumed by complex compounds not only in analysis, biochemistry, biology, catalysis, and other branches of science, but also in industry, wherever trace concentrations of metal ions may influence laboratory experiments or the purity of manufactured products.

Walter de Gruyter & Co. Berlin W 35: *Experimentelle Einführung in die anorganische Chemie*, by H. Biltz, W.

Klemm, and W. Fischer; 50th ed., 214 pp.; paperbound, DM 14.80. — This excellent text was first published in 1898 and has been revised constantly ever since. • *Lehrbuch der organischen Chemie, Vol. III*, by F. Klages; 1958, 785 pp. (31 ill., 24 tables); DM 104. — The final volume of this probably most modern and exacting German textbook of organic chemistry deals with the mineral types of organic compounds, dyestuffs, chemistry of macromolecular compounds, carbohydrates, natural isoprene derivatives, and other N-free natural substances, and the fundamentals of biochemistry. An excellent presentation by a great teacher.

Edition Cantor, Aulendorf i. Württ.: *Suppositorien*, by H. von Czetsch-Lindenwald; 1958, 119 pp.; paperbound, DM 12.50. — A monograph on suppositories — history, production, packing, testing, etc., with 25 tables, 14 illustrations, 212 literature references.

Vulkan-Verlag Dr. W. Classen, Essen: *Richtlinien fuer die Aufbereitung von Kesselspeisewasser und Kuchlwasser*; 5th ed., 267 pp. (114 ill.) DM 46. — A collection of rules and regulations for the construction, maintenance, and inspection of all types of equipment for water treatment and of the methods recommended for water treatment and cooling.

The Board of Editors of *Talanta*, international research journal in the field of analytical chemistry, announce a new award to be known as the Talanta Medal. The American editor of *Talanta* is Prof. Louis Gordon, Department of Chemistry & Chemical Engineering, Case Institute of Technology, Cleveland, Ohio.

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About AIC Members

The 1959 Kirkpatrick Achievement Awards Dinner, sponsored by McGraw-Hill Publishing Co., New York 36, N. Y., was held at the Hotel Astor, New York, N. Y., December 1. Dr. Sidney D. Kirkpatrick, Hon. AIC, for whom the awards are named, was toastmaster. Dr. Walter G. Whitman, Hon. AIC, head, Department of Chemical Engineering, Massachusetts Institute of Technology, and general chairman of the Committees of Award, presented the awards.

The award for Chemical Engineering Achievement, sponsored by *Chemical Engineering* was presented to Texaco Inc.

The award for Chemical Management Achievement, sponsored by *Chemical Week*, was presented to Food Machinery & Chemical Corp.

Dr. T. Keith Glennan, administrator, National Aeronautics and Space Administration, and president (on leave) of Case Institute of Technology, spoke on "Framework for Achievement—1959."

Dr. Eric J. Hewitt, F.A.I.C., vice president, Evans Research & Development Corp., New York 17, N. Y., announces that Lawrence J. Miller, Miss Deborah Schwimmer, George Iwaskow, and Miss Josephine Conticchio, have been added to the staff.

Dr. Robert T. Armstrong, F.A.I.C., vice president and technical director, Celanese Corp. of America, New York, N. Y., and **Dr. Hiram R. Hanmer**, F.A.I.C., vice president and director of research, American Tobacco Co., Richmond, Va., are members of the board of governors of the Research Triangle Institute of North Carolina, a non-profit corporation.

Dr. C. A. Hochwalt, F.A.I.C., vice president, Monsanto Chemical Co., is serving on the corporate gifts division of Saint Louis University, St. Louis, Mo.

Dr. Jasper H. Kane, F.A.I.C., vice president in charge of research of Chas. Pfizer & Co., Inc., New York, announces that the National Institutes of Health have given the company permission to market a Salk-type poliomyelitis vaccine.

Dr. W. S. Herbert, F.A.I.C., has been appointed associate director of research at the Carl F. Norberg Research Center of The Electric Storage Battery Co. at Yardley, Pa. He was formerly technical director of the Ray-O-Vac Co., a division of The Electric Storage Battery Company.

Robert C. Swain, F.A.I.C., vice president, American Cyanamid Co., New York 20, N. Y., has been elected president of Cyanamid International Corp., and director general of Cyanamid International.

Dr. W. David English, F.A.I.C., has been promoted to senior research chemist of the U. S. Borax Research Corp., Anaheim, Calif.

Sidney B. Levinson, F.A.I.C., technical director, D. H. Litter Co., Inc., 116 E. 16th St., New York 3, N. Y.; **John S. Congelton, F.A.I.C.**, section chief, synthetic coatings, National Research & Development Labs., 2121 McCarter Highway, Newark, N. J., and **Carlton H. Rose, F.A.I.C.**, of National Lead Co., 111 Broadway, New York 6, N. Y., received New York Paint & Varnish Production Club awards, Jan. 7, signifying "outstanding contribution to the advancement of the protective coatings industry and the New York Paint & Varnish Production Club."

Dr. Bernard S. Friedman, F.A.I.C., chairman of the Chicago Section of the American Chemical Society, announces that the 1960 Willard Gibbs Medal will be presented May 20, to Dr. George B. Kistiakowsky, special assistant to President Eisenhower for science and technology.

Dr. Harvey A. Neville, F.A.I.C., vice president and provost, Lehigh University, Bethlehem, Pa., announces that Dr. Edward D. Amstutz has been named head of the Department of Chemistry.

Hazel Bishop, F.A.I.C., has been elected Fellow of the New York Academy of Sciences.

John B. Mellecker, F.A.I.C., former editor of *Chemical Engineering Progress*, is now editor (East) of *Chemical Processing*, 369 Lexington Ave., New York 17, N. Y.

Dr. Lloyd A. Hall, Hon. AIC, retired from The Griffith Laboratories, Inc., Chicago, to Pasadena, Calif., has been appointed to the Research Advisory Board of Truesdail Labs., Inc., Los Angeles 65, Calif.

Dr. Arthur C. Cope, F.A.I.C., head, Department of Chemistry, Massachusetts Institute of Technology, has been chosen president-elect of the American Chemical Society.

Elbert C. Weaver, F.A.I.C., of Phillips Academy, Andover, Mass., was re-elected treasurer of the ACS Division of Chemical Education.

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